

A NEW LEPIDOPTEROUS ENEMY OF YELLOW PINE IN OREGON.

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Coloradia pandora Blake Fam. (SATURNIDÆ).

The genus *Coloradia* was erected by Blake¹ for the species *pandora* in 1863 and the description was based on a single specimen from "Pikes Peak, Colorado Territory." Barnes² described *C. doris* as a new species from Salida and Greenwood Springs, Colorado. Dyer³ lists *doris* as a variety and gives the distribution of the species as "Rocky Mountains." Holland⁴ gives the range as "Eastern foot hills of the Rocky Mountains to the Cascades and from Montana to Mexico." Comstock⁵ simply states that *Coloradia* is the lowest genus in the family Saturniidae, and that it is a rare insect from the West. Other than the original description and the few remarks quoted above, I have found no reference to this species in our literature.⁶ The moths seem to be represented but rarely in collections, yet in certain localities they appear in large numbers at times.

DESCRIPTION:

Eggs 2.5 mm. long by 2 mm. in width, flattened on both upper and lower surfaces, pale bluish-green color and semi-transparent when deposited, later, becoming opaque and of a duller green. The upper surface has a tendency to shrink, becoming strongly and irregularly depressed. The eggs are deposited in clusters of from six to seventy-four on the trunks of yellow pine.

1 Blake, C. A., Proc. Ent. Soc. Phila., 11, p. 279, 1863.

2 Barnes, Wm., Can. Ent., XXXII. p. 46, 1900.

3 Dyer, H. G., U. S. Nat. Mus., Bul. No. 52, p. 74.

4 Holland, W. J., The Moth Book, p. 91, 1903.

5 Comstock, J. H., Manual for the Study of Insects, 1917, p. 350.

6 Since the above was written Dr. J. M. Aldrich informs me that he has secured caterpillars from the Mono Lake region in California and reared the adults which are *C. pandora*. The species attacks Jeffrey Pine in the Mono Lake region and the Indians gather and dry the larvæ, which are used for food. See JOURN. N. Y. ENT. SOC., Vol. 20, page 28.

The larva, when first hatched, is black or brownish with a black head, hairy and 5 mm. in length. The full-grown larva measures over two inches in length and is greenish in color.

The Adult. Color brownish-gray, antennæ yellow, biserrate a little longer than the thorax. Thorax clothed with short soft hairs. Abdomen above dark brown, sides grayish, apex tufted extending beyond the wings. Wings semi-transparent. Forewings with two indistinct oblique wavy brownish bands, the exterior one paler, space between the bands sparsely clothed with white scales, a small distinct black spot on the discal nervure. Hind wings with an indistinct cloudy band, broader at the interior margin, gradually tapering to the exterior. A pale brownish spot on the disc. Base of wings clothed with pale pinkish hairs, cilia at the extremity of the veins whitish. Underside brownish-gray, tinged with pink, the discal spots more distinct than on upper surface. Length of body ♀ 1.35 ♂ 1.2 inches, expanse ♀ 3.4 ♂ 2.7 inches.

LIFE HISTORY AND HABITS:

Egg deposition occurs over a period of two to three weeks in July ¹ and the young larvæ begin to emerge the last week in August and continue emerging for about two weeks. The larvæ leave the egg by gnawing out one end of the shell. The larvæ are voracious feeders and rapidly defoliate the pines. Complete data on life history has not yet been secured. The adults appear in late June and early July. The fact that no adults were noticed in 1919 and no grown caterpillars appeared in 1920 leads to the belief that the life cycle covers a period of two years.

ECONOMIC IMPORTANCE:

During the summer of 1919 the larvæ appeared in great numbers near Calimus Butte on the Klamath Indian Reservation and practically stripped the needles from all but the largest yellow pine (*Pinus ponderosa*) trees on ten sections lying in Twp. 33 S., R. 10 E., Twp. 36 S., R. 12 E., and Twp. 31 S., R. 9 E. During the summer of 1920 no caterpillars appeared, but thousands of the moths were present to deposit their eggs upon the trunks of the trees and even upon the debris of the forest floor. After mating and depositing eggs the adults die,

¹ On Klamath Indian Reservation in Oregon.

and their bodies were so numerous around the trunks of the previously defoliated trees that a pile two feet across and a foot high was raked from around a single tree. The trees which were defoliated in 1919 had, in August, 1920, a very sparse crop of new, short, light green needles, and these will probably be destroyed in the fall by the new generation of caterpillars which were emerging September 1, 1920. A second defoliation will undoubtedly kill the trees either of itself or indirectly by so weakening them that *Dendroctonus brevicomis* will enter.

The moths appear to be spreading from this center, as many individuals were picked up at Chiloquin and Klamath Falls,¹ where they had probably been attracted to the arc lights. A few individual specimens were found, by Mr. J. C. Patterson, as far west as Jenny Creek in Jackson County.

CONTROL:

Undoubtedly there are natural enemies of this moth present, but the limited time spent in the locality precluded the possibility of ascertaining what parasites were there and to what extent they existed. The larvæ would undoubtedly succumb to any of the ordinary poison sprays, but the cost of spraying large forest trees would be enormous and only justifiable as a coöperative proposition to prevent the spread of the moth to adjacent territory. The limited area in which they now occur might well be cleaned up at a moderate cost, thus making sure that the surrounding territory would be protected for some time to come.

MISCELLANEOUS NOTES.

The Position of the Dioptidæ (Lepidoptera): In my paper in *Psyche* (23: 191) I note the Dioptidæ as lacking a tympanum. More careful study shows the tympanum is present, though very small and unspecialized in the typical forms, so that the family falls naturally at the foot of the series leading up to the Notodontidæ, Noctuidæ and Arctiidæ, having an upright egg, a larva with uniordinal hooks and metathoracic tympanum; in fact, at present the family is not really distinguished from the Notodontidæ in any very tangible way. The

¹ About 40 miles from the center of infestation.